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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/665,415	09/20/2000	Kazuyuki Nakagawa	500-0-240	8537

7590 07/28/2004
McDermott Will & Emery
600 13th Street N W
Washington, DC 20005-3096

EXAMINER

PAREKH, NITIN

ART UNIT	PAPER NUMBER
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2811

DATE MAILED: 07/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/665,415

Applicant(s)

NAKAGAWA ET AL.

Examiner

Nitin Parekh

Art Unit

2811

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 June 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 7-12 is/are pending in the application.
- 4a) Of the above claim(s) 7-10 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-3 and 12 is/are allowed.
- 6) ☒ Claim(s) 11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 August 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Request for Continued Examination

1. A request for continued examination (RCE) under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 06/09/04 has been entered. An action on the RCE follows.

2. The amendment filed on 06/09/2004 has been entered.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

Patentability shall not be negated by the manner in which the invention was made.

4. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fukutomi et al. (US Pat. 5976912) in view of Lee et al. (US Pat. 6252298).

Regarding claim 11, Fukutomi et al. disclose a semiconductor device comprising:

- a semiconductor element having a bottom/primary surface (see 3 in Fig. 11a-12g) and a top/back surface
- a laminated polyimide/metal substrate (LS-19/2 in Fig. 11a-11g and 20/21 in Fig. 12a-12g) having a top/primary surface and a bottom/back surface with external bumps/electrodes (see 7 in Fig. 11g/12g) disposed on the bottom/back surface
- a bonding tape/adhesive layer (see 4' in Fig. 11a-12g) bonding the primary surface of the semiconductor element to the primary surface of the LS so that the semiconductor element and the LS directly contact each other via the tape/adhesive layer
- the bonding tape/adhesive layer extending outward relative to and completely all the way around the primary surface of the semiconductor element without reaching an outer edge of the primary surface of the LS (see a cross-sectional view in one direction showing 3, 4' and the LS in Fig. 11d and 12d) and covering an area of the LS under which all the external bumps/electrodes are disposed (see Fig. 11d-11g and 12d-12g)

(Fig. 11a-12g; Col. 13, line 47- Col. 14, line 40).

Fukutomi et al. fail to teach the LS being a circuit board (CB).

Art Unit: 2811

Lee et al teach a wire bonded ball grid array (BGA) having a conventional laminated substrate (LS) comprising laminated polyimide/metal layers (21/26/28 in Fig. 2-4), the LS being in a form of a flexible and thin circuit board/CB to achieve the desired dimensions and flexibility and to provide the substrate occupying smaller space (Col. 3, line 35- Col. 4, line 30).

It would have been obvious to a person of ordinary skill in the art at the time invention was made to incorporate the substrate being a circuit board as taught by Lee et al. so that the desired dimensions and flexibility can be achieved in Fukutomi et al's device.

Allowable Subject Matter

5. Claims 1-3 and 12 are allowed.

Reasons for Allowance

6. The following is an examiner's statement of reasons for allowance:

The references of record do not teach either singularly or in combination at least the limitations " wherein the primary surface of said semiconductor element is bonded to the primary surface of said circuit board by means of an adhesive layer which is greater in size than the primary surface of said semiconductor element, said adhesive layer extends outside an outer edge of the primary surface of said semiconductor element

Art Unit: 2811

without reaching an outer edge of the primary surface of said circuit board, said adhesive layer extending outward relative to and completely all the way around the primary surface of said semiconductor element so cover an area of the circuit board under which all the external electrodes are disposed" in a device having a semiconductor element adhesively bonded to a circuit board and having electrodes connected to the board electrodes via an opening hole in the circuit board.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nitin Parekh whose telephone number is 571-272-1663. The examiner can normally be reached on 09:00AM-05:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on 571-272-1732. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9318.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

NP

07-22-04



NITIN PAREKH

PATENT EXAMINER

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